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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/584,168 | 06/22/2006 | Eric Labarriere | 12928/10035 | 4749 |

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| EXAMINER | |
|---|---|
| PALABRICA, RICARDO J | |
| **ART UNIT** | **PAPER NUMBER** |
| 3663 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/584,168 | LABARRIERE ET AL. | |
| | Examiner | Art Unit | |
| | Rick Palabrica | 3663 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *24,26-33 and 35-48* is/are pending in the application.

4a) Of the above claim(s) *29,38 and 41-46* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24, 26-28, 30-33, 35-37, 39, 40, 47 and 48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's 10/19/09 submission, which directly amended claims 24,28-30, 35-37, 39, and 40, canceled claim 34, amended the specification, and traversed the rejection of claims in the 6/17/09 Office action, has been entered.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 24, 26-28, 30-33, 35-37, 39, 40, 47 and 48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to

enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 24 and 36 recite the limitation, "the noses being arranged in the nodes of the substantially regular network in order to be positioned in a longitudinal continuation of at least some of the fuel rods and/or at least some of the guide tubes of the support skeleton." Underlining provided.

First, the clause, "at least some", means that: a) some fuel rods have noses positioned in their longitudinal continuation while some other fuel rods have no corresponding said noses; and b) some guide tubes have noses positioned in their longitudinal continuation while some other guide tubes have no corresponding said noses. There is neither an adequate description nor enabling disclosure for: a) a configuration wherein some fuel rods and some guide tubes DO NOT have noses positioned in their longitudinal continuation; b) criteria for determining which fuel rods and guide tubes shall include said noses and which ones shall not have these nodes.

Second, the term "and/or" means either "and" or "or". There is neither an adequate description nor enabling disclosure of the criteria for determining when the cited limitation is: a) applied to BOTH fuel rods and guide tubes; b) only to either one of fuel rods or guide tubes. Also, if the limitation is applied to b), there is no criterion provided for when to select fuel rods and when to select guide tubes.

3. Claims 24, 26-28, 30-33, 35-37, 39, 40, 47 and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete and metes and bounds cannot be determined because the claims are inconsistent with the specification in regard to the limitation, “the noses being arranged in the nodes of the substantially regular network in order to be positioned in a longitudinal continuation of at least some of the fuel rods and/or at least some of the guide tubes of the support skeleton.”

Claims 24 and 36 recite the limitation, “the end piece” (see 4th to last line in both claims). There is insufficient antecedent basis for this limitation in each claim. There are two end pieces recited in the preceding lines of the claims, and the limitation can be interpreted to refer to either the "upper terminal end piece" or the "lower terminal end piece." Note the same observation applies to all dependent claims that recite "end piece", or “terminal end piece”, where these are intended to refer to a specific terminal end piece.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 24, 26-28, 30-33, 35-37, 39, 40, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christiansen et al. (U.S. 5,533,078) either alone or in view of Dunlap et al. (U.S. 4,420,458). Christiansen et al. disclose the applicant's claim limitations except for the noses projecting from the lower terminal end piece.

As to claims 24 and 36, Christiansen et al. teach a fuel assembly for a PWR comprising (see Fig. 2): a) fuel rods 48; b) a support skeleton comprising an upper terminal end piece 46 and a lower terminal end piece 42; and c) guide tubes 14. They also teach:

> *"[t]he top of each fuel rod is secured within a fuel rod support housing which has a plurality of springs each of which exerts a lateral force on the top of the fuel rod to overcome the vibratory forces induced by the coolant flow thereby preventing lateral motion and possible fuel rod fretting." See col. 4, lines 13+.*

Therefore, it would have been obvious to one of ordinary skill in the art to have used the fuel rod housing in the lower terminal end piece instead of the upper terminal end piece because this would have been a design choice. Having the fuel rod housing provided with the lower terminal end piece would have achieved the same result of overcoming flow induced vibration, and it represents nothing more than a re-arrangement of parts (see MPEP 2144.04.VI.C).

Applicant's claim language, "noses", reads on the support housings.

If applicant is of a different opinion, it would have been obvious to one of ordinary skill in the art to have used the fuel rod housing BOTH in lower terminal end piece and in the upper terminal end piece because this would have further increased the ability of the nuclear fuel assembly in Christiansen et al. to overcome flow induced vibrations.

Note that the claims do not preclude the fuel assembly from having noses both in the upper and lower terminal end pieces.

If applicant is still of a different opinion, the claims are still unpatentable over prior art. Dunlap et al. teach the provision of a means to minimize the effect of flow induced vibration that could result in disengagement of an element (e.g. a water rod) in a fuel assembly. This means (i.e., lengthened shank) is provided both at the upper and lower ends of the fuel assembly (see Fig. 5 and col. 5, lines 21+).

Note that prior art references, i.e., Christiansen et al. and Dunlap et al, which are relied upon as a basis for rejection of the claimed invention, are reasonably pertinent to the particular problem with which the applicant was concerned, i.e., reducing flow induced vibration. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by Christiansen et al., by the teaching in Dunlap et al., to include a fuel rod housing in the lower terminal end piece (in addition to that in the upper terminal end piece) to gain the advantages thereof (i.e., increased flow vibration resistance), because such modification is no more than the use of a well known expedient within the nuclear art. It would have been further obvious to said artisan to have the bottom portion of the housing in the lower terminal end piece closed (e.g., in a conical configuration as in Dunlap) to prevent entry of debris into the housing.

As to claim 26, some of the noses Christiansen et al. (i.e., tube cell 60) belong to members for fixing guide tube (see Fig. 5 showing tube cell 60 that receives guide 14, and col. 4, lines 18+).

As to claim 27, Christiansen et al. use springs as fixing means. The use of a screw in place of springs is a matter of design choice or a constrained imposed by the utility that will employ the apparatus in its nuclear plant.

As to claims 28 and 37, applicant's claim language, "arrangement for laterally maintaining the adjacent longitudinal ends of the fuel rods" reads on springs in the housing.

As to claims 30 and 39, applicant's claim language, "arrangement for longitudinally securing the lower longitudinal ends of the fuel rods" reads on springs in the housing.

As to claims 31 and 40, applicant's claim language, "two components for clamping between them the lower ends of the fuel rods" reads on the pair of springs in the housing.

As to claims 32 and 33, the closure of the bottom portion of the housing in the lower terminal end piece prevents entry of debris.

As to claim 35, applicant's claim language, "feet", reads on the plurality of fins extending from the outer surface of the housing (see Fig. 6).

As to claims 47 and 48, the specific geometry of noses converging to a point is a matter of design. Alternatively, Dunlap et al. teaches an old and advantageous conical configuration (discussed above) which is equivalent to the claimed geometry.

## *Conclusion*

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rick Palabrica/ November 16, 2009
Primary Examiner, Art Unit 3663